Rare and Endemic Plants Biological Evaluation and Discussion of Sagebrush Plant Communities

for the

Patrick Vegetation Management Project

Wallowa-Whitman National Forest
Whitman Ranger District
Draft

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Date: 12/18/2019
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SUMMARY

Federally Listed/Candidate Species:

Whitebark Pine – No Effect
Spiranthes diluvialis – No Effect

Special status species: NI or MIIH for Pacific Northwest Region Special status species.

Plant community of concern:
Ponderosa pine/sagebrush community may be degraded under Alternatives 2 and 3, unless Protective measures followed.

Part 1: Rare Plant Biological Evaluation

INTRODUCTION

Management activities considered in this Environmental Assessment require a Biological Evaluation (BE) to be completed (FSM 2672.4). This Biological Evaluation (BE) analyzes effects or impacts from the proposed action and alternatives to species listed, or proposed to be listed, as Endangered or Threatened by the U.S. Fish and Wildlife Service, and Species listed as Special status by USDA Forest Service Region 6.

A BE is prepared for any planned, funded, executed, or permitted programs and activities for possible effects to proposed, threatened, endangered, or sensitive (TES) species. The BE is the means of conducting the review and documenting the findings (FSM 2672.4). The objectives of the BE are to

1) ensure that Forest Service actions do not contribute to the loss of viability of any native or desired non-native plant animal species or contribute to trends toward Federal listing of any species;

2) comply with the requirements of the Endangered Species Act that actions of Federal agencies not jeopardize or adversely modify critical habitat of Federally listed species; and

3) provide a process and standard by which to ensure that threatened, endangered, proposed, and sensitive species receive full consideration in the decision-making process

Project Information

The proposed project area is on Whitman District, Wallowa Whitman NF, in Baker and Grant counties, Oregon.

The Whitman District Ranger is proposing to treat the area with a combination of commercial harvest, pre- and post-harvest thinning, followed by prescribed burning. Most acres will have overlapping timber and fire treatments, but some will have one or the other. The ID team is evaluating three alternatives. For a full description, see the EA.

Table 1. Brief Summary of Alternatives

Alternative 1-No Action	No treatments. Other ongoing actions continue.
Alternative 2-Proposed Action	Commercial thinning = 22,989 acres in various categories; 21,614 ground based. Non-commercial = 10,921 acres Pre-commercial = 19,502 acres Majority of acres would be grapple piled vs. hand piled. Prescribed burning = 36,032 acres, with most of this taking place on piles created by the various thinning, but some taking place on additional stand-alone acres. Alternative 2 acres thinning inside of RHCA (riparian habitat conservation areas): Commercial = 48, Non-commercial = 3745, and Pre-commercial = 467
Alternative 3 – RHCAs excluded	Identical to Alternative 2, except no treatments in RHCAs other than Prescribed burning and aspen maintenance.

Action alternatives include roadwork, including temporary road construction, road maintenance, road decommissioning and road reconstruction.

Protective Measures

To minimize or eliminate deleterious impacts to TES plants or potential TES/native plant habitat, I suggest the following Project Design Features for the action alternatives:

- To protect sensitive plant species, known population locations will be excluded from ground disturbing treatments by implementing a no-disturbance buffer around each site of a size adequate to provide protection from implementation impacts. The size of buffer will be determined based on the species and size of the population. Known occurrences will be depicted as Areas-to-Protect on implementation maps. These areas will be identified on the ground as needed for project implementation.

- To protect *Eleocharis bolanderi* which is engulfed by *Ventenata dubia* (VEDU), occurences which contain VEDU should be burned but only if they can be treated with imazapic (Plateau) in late fall following the burn to prevent increased VEDU. Otherwise they should remain unburned. If treated, before and after occurrence data should be taken for VEDU and ELBO.

- To protect a hybrid of botanical interest, the *Spiranthes* located in 2018 will be treated the same as a Sensitive occurrence (above).

- To protect undiscovered whitebark pines, do not cut whitebarks but require thinning of all other tree species less than 21 inces dbh within a 30 foot radius around whitebark pine individuals.

- In order to protect sagebrush communities and the habitats associated with sagebrush communities within prescribed fire units, protect sagebrush within the units during ignition of prescribed fire by:
    1) Excluding fire from meadows or other openings (non-forested) where sagebrush plants occur,
    2) Avoiding direct ignition of sagebrush and the area directly under/adjacent to sagebrush plants where they occur outside of the above mentioned openings/meadows,
    3) Ignite units or portions of units where sagebrush occurs within forested stands in the spring to the extent possible to allow for higher live fuel moistures within the sagebrush to lower intensities and severities.

- To assess impacts of burning sagebrush communities with invasive annual grasses in or nearby: Pre and post burn monitoring of sagebrush communities shall be co-ordinated through a request to the Ecology program and personnel with time and interest are invited to participate. Personnel should work together to coordinate monitoring timeframes based on expected ignition timeframes. Monitoring data will be compiled and shared with all interested personnel when monitoring is complete. Monitoring would occur prior to prescribed fire implementation and within two seasons post implementation, then every five years for 3 cycles (15 years total) to evaluate the effectiveness of the above measures.

- To protect potential sensitive plant habitats, avoid ground disturbing activities (piling slash, decking, motorized travel, parking, staging operations) on previously undisturbed non-forested terrain.

- To protect native plant habitat and potential habitat for sensitive plant species from competition with undesirable non-native species, follow Forest Plan and Regional guidelines for including weed spread prevention measures in implementation contracts and for utilizing native species for restoration and erosion control work.

- To protect native plant habitat and potential habitat for sensitive plant species in riparian areas from deleterious thermal effects of fire, project fire ignition will not occur within Riparian Habitat Conservation Areas (RHCAs); but low intensity prescribed fire will be allowed to back into the these areas.

- To protect native plant habitat and potential habitat for sensitive plant species from the potential cumulative effects of soil disturbance and erosion as a result of vegetation management activities:
    i. Rehabilitate landings after completion of timber harvest activities where needed to minimize colonization by undesirable plant species and to minimize bare soil;
    ii. Use BMPs (e.g. scattering slash, seeding, construction of waterbars) to minimize erosion from skidtrails.

Species Considered

Rare and endemic plant species meet one or more of the following criteria: 1. Federally listed species (Threatened, Endangered, or Proposed), 2. FS Sensitive species(now known as Special status species in R6) as of 2015.

Federally listed threatened, endangered and proposed plant species that were considered for this project were provided by the USFWS through an iPAC request, which provides an official letter and species list (attached, dated July 3, 2019).

I submitted a shapefile of the analysis area. The USFWS has identified the following federally listed species that may have habitat in the analysis area:

Whitebark Pine (*Pinus albicaulis*) – candidate

In addition, a model available in R6 GIS showed potential habitat for federally listed species with scattered small occurrences in six western states and British Columbia:

Ute ladies' tresses (*Spiranthes diluvialis*) - threatened

The R6 Special status plant list of 2015 was used because project fieldwork was done before the 2019 list was available. Both 2015 and 2019 lists (USDA-Forest Service) and can be found at https://www.fs.fed.us/r6/sfpnw/issssp/agency-policy/.

AFFECTED ENVIRONMENT

Pre Field Review

I conducted an initial Pre-Field Review in 2018. Rare plant species considered were those on 2015 R6 Regional Forester's Special Status Species list and those listed by USFWS for as Listed, Proposed and Candidate species. The FS rare plant database (NRIS), and Oregon Biodiversity Information Center (ORBIC) data were examined to identify whether any threatened, endangered or sensitive (TES) plants or potential habitat are known in or near the project area boundary (PAB). Two rare species are known from the project area (Table 2).

Table 2: Documented rare plant occurences prior to 2018:

Species	#area occupied	Plant count	Observer(s)	Year found
Botrychium montanum	0.27	15	P. Brooks, D. Thomas	1998
Eleocharis bolanderi	0.3	100	G. Yates	2009
Eleocharis bolanderi	2.27	20	G. Yates	2009
Eleocharis bolanderi	2.71	Unknown	G. Yates, P. Brooks	2013
Eleocharis bolanderi	0.65	Unknown	G. Yates	2009

Based on present available information, it was determined that the analysis area contains potential TES plant habitat. A pre-field review of data and Special status plant list shows that the analysis area contains suitable habitat for 37 TES plants (Table 3). Table 3 includes an assessment as to the likelihood of these species occurring in the analysis area.

Field Inventories

Field Surveys 2018

In 2018, we chose to focus on riparian habitat because the Proposed Action included treatments in the RHCAs, plus a R6 GIS model showed possible habitat for *Spiranthes diluvialis*, a federally listed species. We spent a much shorter amount of time investigating upland areas noted as promising as we surveyed the riparian areas. We found the Malhuer Rare Plant Guide to be most appropriate to the area. We were close to the boundary with the Malhuer.

Table 3: Checklist for botanists in 2018

Scientific name	Common name	Habitat summary	Primary investigator assessment
Achnatherum wallowaensis	Wallowa ricegrass	Basalt scablands and lithosols; shallow rocky soils, sometimes w/stiff sage, strict buckwheat, and ponderosa pine surrounding	Habitat could exist
Botrychium ascendens	Upward-lobed moonwort	Moist meadows, edges of ponds and lakes, grassy forests. Some species have been found under various species of conifer trees. Sandy soils, or areas moist in spring. In forested areas, often associated with queens-cup bead lily or strawberries.	Habitat is present in the area, especially along the larger creeks. Known occurrence of B. montanum was not re-located, but a new occurrence was found.
Botrychium campestre	Prairie moonwort		
Botrychium crenulatum	Crenulate moonwort		
Botrychium lineare	Slender moonwort		
Botrychium lunaria	Moonwort		
Botrychium minganense	Gray moonwort		
Botrychium montanum	Mountain grape-fern		
Botrychium paradoxum	Twin-spiked moonwart		
Botrychium pedunculosum	Stalked moonwort		
Calochortus longebarbatus var. peckii	Peck's long-bearded sego-lily)	Grassy margins of wet meadows, and under pines. Wet to moist meadows. Along stream edges. Often partially shaded by Ponderosa pine. On soils derived from basalt and volcanic ash.	Possible
Calochortus macrocarpus var. maculosus	Green-band mariposa-lily	Dry plains, rocky slopes, sagebrush scrub, pine forests, usually in volcanic soil. Dry grasslands, ridge tops. In rocky, basaltic derived soils, on hillsides, rock outcrops and cliff bands. In grasslands on steep slopes	Not likely to occur in the analysis area; well outside known range of this taxon.
Carex cordillerana	Cordilleran sedge	Dry forests and riparian woods. Mid-elevations.	Possible
Carex diandra	Lesser panicled sedge	Bogs and fens, floating peat mats, lake and pond shores, springs, seeps. Sometimes in brackish water. Groundwater dependent ecosystems, usually on peat soils. Wettest nonaquatic microsites in fens, pH usually between 6 and 8	Possible
Carex diurscula	Spikerush sedge	Dry prairie, sagebrush steppe and open forest east of the Cascades.	Likely
Carex lasiocarpa var. americana	Slender wooly sedge	Fens, bogs, lakeshores, streambanks, seepage areas, and wet meadows. In deep, organic acid soils with low to moderate nutrients. Sometimes forming floating mats. It can be a community dominant in acidic fens and bogs	Possible
Carex parryana	Parry’s sedge	Flat to gently sloping meadows around headwater streams, springs. Often with Carex praegracilis and/or Poa pratensis. In ecotone between wetlands and uplands. Sub-irrigated soils that dry out in summer	Possible

Scientific name	Common name	Habitat summary	Primary investigator assessment
Carex retrorsa	Retrorse sedge	Floodplains in forests, stream sides, lakeshores, swamps, wet thickets, wet meadows. Sandy riverbanks. Sites are wet in spring, but may dry out by late summer	Possible
Carex scirpoidea ssp. stenochlaena	Alaskan single spike sedge	Moist meadows, streambanks, and rocky slopes. Beside waterfalls and on seepy cliffs. Somewhat acidic substrates.	Unlikely. Most of project area too low and no whitebark pine.
Castilleja viscidula	Sticky indian paintbrush	Mid-elevation juniper and mixed conifer woodlands to rocky subalpine slopes and summits. Associated species: Pinus albicaulis, Ipomopsis aggregata, Eriogonum umbellatum, E. sphaerocephalum and Eremogone (Arenaria) spp.	Possible
Cicuta bulbifera	Bulb hemlock	Obligate wetland species found at edges of marshes, show-moving streams, lake margins, bogs, wet meadows and shallow standing water.	Unlikely. Most of project area too high
Cypripedium fasciculatum	Clustered lady's-slipper	Forest, grand fir to Ponderosa pine, and warm riparian forests. Populations generally found in 60-100% shade. Ultra basic soils, granitics, schists, limestone, and quartz-diorite. Rocky to loamy soils in damp to dry sites. Seeps/springs.	Unlikely
Eleocharis bolanderi	Bolander's spikerush	Fresh, often summer-dry meadows, springs, seeps, stream margins. Wet places, low to mid-montane. In vernally wet swales. Along intermittent streams, moist meadows.	Very likely; known occurences and additional flat, wet, grassy habitat in the area. # new occurences were located.
Erythranthe inflata	Disappearing monkey flower	Vernally moist sites and fluctuating banks of intermittent streams or pools in sagebrush-juniper zone. Amid heavy gravel and boulders at one site. In ecotone between uplands and graminoids at water's edge. Low, wet fields also.	Unlikely, most of project area more forested
Isoetes minima	Midget quillwort	Vernally moist sites and fluctuating banks of intermittent streams or pools in sagebrush-juniper zone. Amid heavy gravel and boulders at one site. In ecotone between uplands and graminoids at water's edge. Low, wet fields also.	Likely. Found nearby on Maluer in similar forest openings
Listera borealis	Northern twayblade	Most known sites in WA are in older forests. Associated tree species include spruce, true firs, and Douglas fir. Moderate elevations	Possible but forests may be too young
Lomatium tarantuloides	Spider biscuitroot	Clearings in upper montane subalpine fir-dominated forest; Primarily in shallow, gravelly, serpentine-derived lithosolic soils on flat to gently sloping southerly to easterly aspects; sites are ephemerally moist to wet and generally poorly vegetated, with L. tarantuloides tending to be the dominant vascular plant species	Likely. Endemic, but sites are adjacent to NW corner of project area.
Luina serpentina	Colonial luina	Open, rocky sites with poor soil development. Usually on steep slopes, above small tributaries. In dry shrub, open juniper, Ponderosa pine, and Douglas fir forest areas	Unlikely in forested units

Scientific name	Common name	Habitat summary	Primary investigator assessment
Lycopodium complanatum	Ground cedar	Dry open coniferous or mixed forest alpine slopes; coniferous forest, with thick duff. Often on rotting logs, moist forest, riparian areas. Also in meadows and on open ridge tops.	Very unlikely
Ophioglossum pusillum	Adder's tongue	Seasonally wet areas in pastures, old fields, roadside ditches, bogs, fens, wet meadows, flood plains, moist woods, grassy swales, dry or damp sand, dry hillsides, acidic soil.	Possible
Phacelia minutissima	Dwarf phacelia	Moist meadow and seep edges, or on vernally wet open meadows and barren slopes. Reported to occur with aspen in other areas. Gravely, clay-loam, well-drained soils. Populations in plan area on basalt or marine sediments.	Suitable habitat was not seen. However, it could occur on moderately sloping dry grasslnad with seepage spots, if this habitat is present and was not discovered during surveys.
Phlox multiflora	Many-flowered phlox	Basalt cliffs, rocky outcrops, rocky openings in dry forest. Wooded rocky areas, as well as in openings in the forest. Loose substrate rather than exposed hard rocks. Residual soils, gravels, cobbles.	Very unlikely to occur in the analysis area
Pinus albicaulis	Whitebark pine	Subalpine, usually near timberline. Dry sites with thin, rocky, cold soils	Unlikely. This shows up on USFWS web tool, but project area too low.
Platanthera obtusata	Small northern bog-orchid	Mesic to wet coniferous forest, forested fens, sphagnum bogs, stream banks, tundra, moist roadsides; 0-3500 m (18). Sometimes found growing on top of rotting logs. Often with Engelmann spruce, or sub-alpine fir. Not necessarily on limestone soils.	Not likely, it prefers moister, boggier habitat that is not present in the analysis area.
Plueropogon oregonus	Oregon semaphore grass	Open, wet meadows, marshes, and riparian areas. Grows in areas of standing or flowing water early in season. Documented sites are not near forested habitats. Sluggish water in depressions and sloughs. Irrigation ditches in southern OR	Not likely to occur, this species is very rare in northeast Oregon
Pyrola dentata	Toothed white-vein wintergreen	Coniferous forest (especially with ponderosa pine (H&C, 1959), found on serpentine soils in the Greenhorn Mountains.	Likely
Spiranthes diluvialis	Ute ladies tresses	Moist riparian often with sagebrush	Unlikely but possible

About 30 person days were spent surveying for rare plants, mainly in riparian and seasonally moist areas. 2 previously documented Botrychium locations were re-visited but not re-located. One new Botrychium montanum occurrence was located, one new Isoetes minima occurrence, and 12 new Eleocharis bolanderi occurences. Many of the occurences are represented by multiple polygons in GIS.

Table 4: Rare plant occurences discovered or re-visited in 2018 field season:

Plant Code	Plant Found	Site ID	Visit Date (or re-visit)	AREA_AC
ELBO	Y	0516310059	7/19/2018	0.3282
ELBO	Y	0616010166	7/2/2009	2.7092
ELBO	Y	0616010166	8/20/2013 revisit	2.7092
ELBO	Y	0616010167	7/2/2009	0.646
ELBO	Y	0616010169	7/9/2009	0.2996
ELBO	Y	0616012500	6/26/2009	2.2749
ELBO	Y	0616012500	7/10/2018 revisit	2.2749
BOMO	Y	0616090813	7/2/1998	0.2668
BOMO	N	0616090813	7/6/2018 revisit	-
BOMI	Y	0616090814	7/2/1998	0.2752
BOMI	N	0616090814	7/11/2018 revisit	-
ELBO	Y	0616310046	6/25/2018	0.0026
ELBO	Y	0616310047	6/25/2018	0.0066
ELBO	Y	0616310049	7/3/2018	0.0047
ELBO	Y	0616310050	6/28/2018	1.233
ELBO	Y	0616310056	7/9/2018	0.0808
ELBO	Y	0616310057	7/3/2018	0.7956
ISMI4	Y	0616310058	5/22/2018	0.0054
BOMO	Y	0616310082	6/14/2018	0.181
ELBO	Y	0616310170	7/5/2018	0.8602
ELBO	Y	0616310171	7/6/2018	0.2388
ELBO	Y	0616310172	6/28/2018	0.1152
ELBO	Y	0616310173	7/6/2017	0.1123

ELBO = Eleocharis bolanderi, BOMO = Botrychium montanum, BOMI = Botrychium minganense, ISMI4 = Isoetes minima

Part 2 Plant Community of Concern: Ponderosa pine/sagebrush

INTRODUCTION

Due to the vulnerability of sage grouse, proposed for Federal listing, land managers are recognizing that high-quality sagebrush plant communities are vulnerable and increasingly rare.

Wallowa-Whitman Forest Plan (1990) Standard and Guideline 2 Vegetation Manipulation specifies “provide and maintain ecologically sound distribution and abundance of plant and animal communities...maintaining all native and desirable species and communities”.

Beyond its importance as sage grouse habitat, sagebrush (shrub steppe) and associated plant species are gaining recognition as important native plant communities worthy of protection: The Oregon Conservation Strategy, Oregon Natural Areas Program/ORBIC (2015), Nature Conservancy, and USFS R6 Terrestrial Restoration and Conservation Strategy (2012) all recognize the sage steppe biome as a priority habitat for conservation and restoration.

Research, including that summarized in the newly released “Science Frame work for Conservation and Restoration of

Sagebrush Biome" USDA (2019) indicates that it is best to exclude fire including prescribed fire, from intact sagebrush biomes.

Fieldwork 2018 and 2019

While conducting rare plant/ weed surveys in Patrick PA, we noticed a late seral sagebrush plant association in good condition: a high quality Ponderosa pine / sagebrush plant association. This area is designated as units 720, 722, 723, and 513 in the action alternatives. The units contain a late seral intact native plant community. Nearby areas that appear to have been slash burn piles in the recent past contain cheatgrass. Many of the open areas that support the sensitive plant *Eleocharis bolanderi* are filled with the invasive annual grass Ventenata dubia. In a follow-up field day in September 2019 when 8 ELBO occurances were visited, 5 of the 8 had moderate to heavy ventenata coverage.

The annuals cheatgrass (Bromus tectorum) and ventenata (Ventenata dubia) as well as the often co-occurring medusahead (Taenatherum caput-medusae) are known to increase fire size by providing continuous fuels, to increase in burned areas and to decreases fire return intervals (FEIS updated 2017 accessed 7/9/19 at https://www.fs.fed.us/database/feis/plants/graminoid/vendub/all.html).

ENVIRONMENTAL CONSEQUENCES

Determinations and Conclusions

Federally Listed Species

Pinus albicaulis (Whitebark pine)

Pinus albicaulis is found on thin rocky soils near timberline and are unlikely in the project area but appeared on the official USFWS letter. The project area extends to elevations just over 6000 ft. No whitebark pine were noted, but if trees are discovered, a protective measure will call for a 30 ft. buffer in which whitebark remain and other tree species are thinned. Therefore, as long as a protective measure is followed, the Patrick project would have **no effect** to *Pinus albicaulis.*

Spiranthes diluvialis (Ute ladies tresses)

From USFWS ECOS species profile *https://ecos.fws.gov/ecp0/profile/speciesProfile?sId=2159* accessed 7/3/2019: "When Ute ladies-tresses was listed in 1992 it was known primarily from moist meadows associated with perennial stream terraces, floodplains, and oxbows at elevations between 4300-6850 feet (1310-2090 meters). Surveys since 1992 have expanded the number of vegetation and hydrology types occupied by Ute ladies'-tresses to include seasonally flooded river terraces, subirrigated or spring-fed abandoned stream channels and valleys, and lakeshores. In addition, 26 populations have been discovered along irrigation canals, berms, levees, irrigated meadows, excavated gravel pits, roadside barrow pits, reservoirs, and other human-modified wetlands. New surveys have also expanded the elevational range of the species from 720-1830 feet (220-558 meters) in Washington to 7000 feet (2134 meters) in northern Utah. Over one-third of all known Ute ladies-tresses populations are found on alluvial banks, point bars, floodplains, or ox-bows associated with perennial streams."

Habitat in Patrick project area looked promising. However, we surveyed over 80% of habitat mapped by the GIS model, and no plants were found. We did find a hybrid *Spiranthes*. I recommend the location of the hybrid be protected as if it were an R6 Sensitive species. Due to extensive surveys, our confidence level is high that *Spiranthes diluvialis* does not exist on the project area, therefore the Patrick project would have **no effect** to *Spiranthes diluvialis*.

R6 Special Status Species

The Regional Forester's Special Status list of 2015 (and current list) is found at https://www.fs.fed.us/r6/sfpnw/issssp/agency-policy/. Many special status plants have potential habitat on the project area due to the wide variety of habitat types dry to moist and various soil and rock types. We noted that some sensitive plants were co-occurring with weeds. Table 5 lists sensitive species occurrences, which overlap with weed occurrences. Weedy grasses are currently not recorded, but are of concern. Table 6 below lists those special status species that are known or suspected in the project area following the 2018 fieldwork and gives a determination for each. All other species on the full

R6 special status plant list are given an effects determination of **"NI-No Impact"** due to not being known in the area or not suspected to have potential habitat.

Table 5: R6 sensitive plants overlapping weed occurrences:

SITE_ID_FS	ACCEPTED_SCIENTIFIC_NAME	NRCS_PLANT_CODE	LAST_UPDATE	GIS_ACRES	Patrick Final Trt.	Invasive	Invasive SP	Invasive year	2nd Invasive	2nd Invasive SP
0616090813	Botrychium montanum	BOMO	1/16/2009	0.267	NCT, RxBurn	06160900308	CYOF	2007	06160903039	CIAR4
0616010167	Eleocharis bolanderi	ELBO	7/7/2009	0.646	Rx Burn	06160900068	LEVU		06160900041	CEDI3
0616010169	Eleocharis bolanderi	ELBO	7/10/2009	0.3	NCT, RxBurn	06160900267	CYOF	2014		
0616310006	Eleocharis bolanderi	ELBO	8/23/2018	0.239	Rx Burn	06160900089	LEVU	2018		
0616310157	Eleocharis bolanderi	ELBO	12/8/2018	0.112	Rx Burn	06160900089	LEVU	2018		
0616310050	Eleocharis bolanderi	ELBO	12/9/2018	1.233	Rx Burn	06160900126	CYOF	1990		

Table 6: Plants from the R6 Special Status species list **documented or suspected** in the project area and Determination Statement (*rows highlighted are documented in project area)*

Scientific Name	Common Name	Documented /Suspected?	Det. Alt. 1 (No action)	Det. Alt. 2 (Action alternative includes RHCAs)	Det. Alt 3 (Actions excluded from RHCAs)
Achnatherum wallowaensis	Wallowa ricegrass	S	NI	NI	NI
Botrychium ascendens	Upward-lobed moonwort	S	NI	MIIH	MIIH
Botrychium campestre	Prairie moonwort	S	NI	MIIH	MIIH
Botrychium crenulatum	Crenulate moonwort	S	NI	MIIH	MIIH
Botrychium lineare	Slender moonwort	S	NI	MIIH	MIIH
Botrychium lunaria	Moonwort	S	NI	MIIH	MIIH
Botrychium minganense	Gray moonwort	S	NI	MIIH	MIIH
Botrychium montanum	Mountain grape-fern	D	NI	MIIH	MIIH
Botrychium paradoxum	Twin-spiked moonwart	S	NI	MIIH	MIIH
Botrychium pedunculosum	Stalked moonwort	S	NI	MIIH	MIIH
Calochortus longebarbatus var. peckii	Peck's long-bearded sego-lily)	S	NI	MIIH	MIIH

Scientific Name	Common Name	Documented /Suspected?	Det. Alt. 1 (No action)	Det. Alt. 2 (Action alternative includes RHCAs)	Det. Alt 3 (Actions excluded from RHCAs)
Carex cordillerana	Cordilleran sedge	S	NI	MIIH	MIIH
Carex diandra	Lesser panicled sedge	S	NI	MIIH	NI
Carex diurscula	Spikerush sedge	S	NI	MIIH	NI
Carex lasiocarpa var. americana	Slender wooly sedge	S	NI	MIIH	NI
Carex parryana	Parry's sedge	S	NI	MIIH	NI
Carex retrorsa	Retrorse sedge	S	NI	MIIH	NI
Carex scirpoidea ssp. stenochlaena	Alaskan single spike sedge	S	NI	MIIH	NI
Castilleja viscidula	Sticky indian paintbrush	S	NI	MIIH	MIIH
Cicuta bulbifera	Bulb hemlock	S	NI	MIIH	NI
Cypripedium fasciculatum	Clustered lady's-slipper	S	NI	MIIH	NI
Eleocharis bolanderi	Bolander's spikerush	D	MIIH	MIIH	MIIH
Erythranthe inflata	Disappearing monkey flower	S	NI	MIIH	MIIH
Isoetes minima	Midget quillwort	S	NI	NI	NI
Listera borealis	Northern twayblade	S	NI	MIIH	MIIH
Lomatium tarantuloides	Spider biscuitroot	S	NI	NI	NI
Luina serpentina	Colonial luina	S	NI	NI	NI
Lycopodium complanatum	Ground cedar	S	NI	MIIH	MIIH
Ophioglossum pusillum	Adder's tongue	S	NI	MIIH	MIIH
Phacelia minutissima	Dwarf phacelia	S	NI	NI	NI
Plueropogon oregonus	Oregon semaphore grass	S	NI	MIIH	MIIH
Pyrola dentata	Toothed white-vein wintergreen	S	NI	MIIH	MIIH

Note: updated with R6 Regional Forester's Special Status Species List 2015
Susp- Suspected potential habitat is within the project area, but no known sites as of this BE date.
Doc- Documented population(s) within the project area.
BI – Beneficial Impact
MIIH- May Impact Individuals or Habitat, But Will Not Likely Contribute to a Trend towards Federal Listing or Cause a Loss of Viability to the Population or Species Activities or actions that have effects that are immeasurable, minor or are consistent with Conservation Strategies would receive this conclusion. For populations that are small - or vulnerable - each individual may be important for short and long-term viability
A **NI -** No impact determination is given to Alternative 1 (no action) for documented or suspected rare, based on the highly probable effect that doing no thinning or prescribed burning will not affect most plant species. The exception is Eleocharis bolanderi, which is documented overlapping the noxious weed Ventenata dubia and sometimes other noxious weeds in seasonally moist non-forested openings with shallow soils, which it occupies. Ventenata dubia is currently untreated and likely to continue to increase and suppress native plants including ELBO, regardless of lack of management actions.

A MIIH may effect habitat or individuals but will not lead to federal listing determination is given for Alternative 2 (proposed action) for documented or suspected rare species that would normally be affected by forest thinning or burning including riparian areas, with the understanding project protection measures are noted for any known or discovered TES species. These protection measures would serve to reduce any impacts on most known or suspected sensitive plant populations. A No Impact determination is given for Alternative 2 for rare species in non-forested openings under the condition that protection measures are followed there as well.

A **MIIH** determination is given for Alternative 3 (actions excluded from RHCAs) for documented or suspected rare species that would normally be affected by forest thinning or burning with the understanding project protection measures are noted for any known or discovered TES species. Because riparian areas would be excluded, a **NI** determination is given for riparian species. A No Impact determination is given for Alternative 3 for rare species which are in non-forested opening under the condition that protection measures are followed there as well.

Part 2: Plant community of concern: Ponderosa Pine/ sagebrush

Impacts to the ponderosa pine/sagebrush community is of concern for several reasons:

Sagebrush as sage grouse habitat: Sagebrush habitat in Patrick PA is about 4 miles from known sage grouse habitat. Despite lack of current use by sage grouse, maintaining potential/historic habitat should be a goal. Wallowa-Whitman Forest Plan (1990) Standard and Guideline 2 Vegetation Manipulation specifies "provide and maintain ecologically sound distribution and abundance of plant and animal communities...maintaining all native and desirable species and communities".

Importance of conserving sagebrush (shrub steppe) and associated plant species as native plant communities is recognized in planning documents including the following:

The Oregon Conservation Strategy (accessed 7/9/2019 at http://www.oregonconservationstrategy.org/strategy-habitat/sagebrush-habitats/) particularly emphasizes the important of basin big sage in the Blue Mountains region, and recommends caution with prescribed fire. The Oregon Natural Areas Plan (2015; https://inr.oregonstate.edu/orbic/natural-areas-program)"... is designed to include examples (of diversity of ecosystems) to assure at least one good example of each ecosystem type, geologic formation and at-risk species is represented in each ecoregion in which they naturally occur." The Plan lists Ponderosa pine-western juniper/big sagebrush-bitterbrush vegetation mosaic as a Medium Priority habitat for conservation, which currently is unrepresented in the program.

USFS R6 regional planning document Terrestrial Restoration and Conservation Strategy (TRACS 2012; https://www.fs.usda.gov/detail/r6/plants-animals/wildlife/?cid=stelprdb5440388) also recognizes the sage steppe biome as a priority habitat for conservation and restoration in the Blue Mountains ecoregion.

Research, including that summarized in the newly released "Science Frame work for Conservation and Restoration of Sagebrush Biome Part 2" USDA 2019 at https://www.fs.usda.gov/treesearch/pubs/57911 and Part 1 https://www.fs.fed.us/rm/pubs_series/rmrs/gtr/rmrs_gtr360.pdf concludes that it is best to exclude fire including prescribed fire, from intact sagebrush biomes which have weedy species adjacent.

Cumulative Effects

A detailed list of potential cumulative actions provided to the ID team by NEPA Planner is attached. I reviewed the actions and find that cumulative effects may affect sensitive plant species, which overlap with the noxious weed species recorded as well as Ventenata dubia (not recorded), and prescribed fire. A Protective measure is recommended. Botrychium montanum also showed an overlap with weeds, but since it was not relocated, it is impossible to assess.

Overall, botanists region wide should carefully consider the effects of burning on Eleocharis bolanderi, a species that likely never burned before annual grasses created continuous fuels between these plants. They grow in otherwise sparsely vegetated areas that are vernally wet. It is unknown how many other populations of ELBO are vulnerable to burning. Future projects would have protection measures for known rare plants. Field surveys and any new sites are routinely added to the NRM database and are available for review when new projects are proposed. Ongoing actions such as camping, hunting and other public uses will not have cumulative impacts on any sensitive plant population because most of those activities occur on hardened sites where rare plants are not located: campsites, trails, and roads.

Therefore, as long as Protective Measures are followed, cumulative effects are not likely to occur to the rare plant resource as a result of the project alternatives.

Similarly, cumulative effects of fire and weeds along with thinning are likely to the Ponderosa pine/ sagebrush plant association unless Protective measures are followed. It is also entirely possible that other public uses may add to the disturbance level, but these were not apparent in 2018.

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